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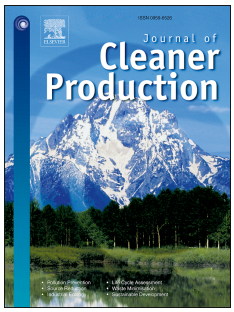

Urban studies and the challenge of embedding sustainability: A review of international master programmes

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Title: Urban studies and the challenge of embedding sustainability: a review of international master programmes

Abstract: The United Nations declaration of the Decade of Education for Sustainable Development (UN DESD 2004-2014) advocates the need for universities to embed sustainability in all learning areas. This inquiry examines how selected post-graduate top-level programmes in urban studies are adapting their curricula to promote sustainable urban development. We start by reviewing an extensive literature to identify the principles and practices characterising the UN DESD, and to identify the topics and themes considered essential for teaching aimed at the promotion of sustainable urban development. Based on the extensive literature review we define an analytical framework in five parts, related to various aspects of curricular content and teaching and learning approaches: programme orientation, skills, ethics and critical reasoning, interdisciplinarity and content related to sustainable urban development issues. We then conduct an empirical study of 25 among the best post-graduate level (MA and MSc) programmes in urban studies from Europe, China, the USA and the Global South, to see how they are adapting their curricula to the requirements of sustainable urban development captured in the analytical framework. While acknowledging the significant context specificities that must be respected, and the multiple challenges that must be reconciled when defining urban studies curricula - we find both strengths and weaknesses in these top programmes, including important differences among the programmes from the four regions. Our data suggests that important steps are being taken towards 'whole-system' transformation envisaged by the UN Decade of Education for Sustainable Development, but also that transformative factors depending on cultural and institutional values and practices remain relatively weak.

Key words:
urban studies; education for sustainable development; sustainability; sustainable urban development; URBACHINA

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> 'the global transformation of higher education towards sustainable development has yet to occur'
>
> UNESCO (2014: 31)

1. Introduction

The need to reorient education towards sustainable development became a policy priority at the 1992 United Nations Conference on Environment and Development (UNCED). The responsibility to articulate this need was given to UNESCO and the United Nations declaration of the Decade of Education for Sustainable Development (DESD, 2004-2014) marks a major effort 'aimed at integrating the principles and practices of sustainable development into all aspects of education and learning, to encourage changes in knowledge, values and attitudes with the vision of enabling a more sustainable and just society for all' (UNESCO 2014: 9). Thus – like sustainable development itself – its ethos is fundamentally normative.

For higher education institutions the DESD advocates the need to address the complexity of current real-world contexts by embedding sustainability in all learning areas across university curricula. Indeed, over the decade notions of sustainability and sustainable development have been increasingly institutionalized (Dyment et al. 2014), however, this has been a slow process. UNESCO (2014) recently recognized that a full integration of sustainable values into higher education systems has yet to take place in most countries, which implies that further efforts are required to ensure that sustainability and sustainable development become an integral part of the academic culture. Education for sustainability is still lacking a consistent interdisciplinary conceptual framework (Jabareen 2012), and a coherent curriculum for sustainability and sustainable development remains a challenge (Ryan et al. 2010). Thus, it is not surprising that during the UN Summit for Sustainable Development in Rio de Janeiro (2012), governments reiterated the need to support higher education institutions in their efforts to secure the research, innovation and skills needed to advance national sustainable development objectives.

In this context, urban development and the fields of study that shape the next generation of scholars, planners, architects and urbanists are a critical arena for sustainability education: urbanisation is amongst the most significant global trends of the 21st century and provides the setting and underlying base for global change (UN Habitat 2012) – thus, its sustainability

is a matter of priority. The DESD focussed on climate change, biodiversity and disaster risk as key development issues for education, and UN member states identified health, water, biodiversity, climate change and energy as the new 'top five issues' to be addressed through education: urbanization represents at once - a major driver of, and an area vulnerable to - each of these. Urban development is, without a doubt, one of the priority 'sectors' (to use UNESCO's own language (2014: 33)) where education and sustainability must 'align' with some urgency to ensure a transition to more sustainable cities (UN Habitat 2014a). The Sustainable Development Goals, adopted in New York in September 2015, include two objectives central to this discussion (UNGA 2015: 17 and 22): Goal 4) 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all', which includes an aspiration that by 2030 'all learners acquire the knowledge and skills needed to promote sustainable development'; and Goal 11) 'Make cities and human settlements inclusive, safe, resilient and sustainable'.

Together, studies relating to urbanism, architecture, urban design, urban planning and urban geography, account for the interdisciplinary and cross-sectoral field of 'urban studies education' (USE) explored in this paper. Within this array of disciplines and perspectives, urban planning enjoys particular prominence, but has also been criticized for failing to integrate design, investigation and communication (Müller et al 2005). Whereas the design focus stems from the beginning of the 20th century with utopias such as the 'radiant city' promoted by Le Corbusier, the establishment of the urban planning approach in the 1960s builds on the idea of a city with a focus on the human being and social contacts at the neighbourhood scale (e.g. Jane Jacobs). Strategic planning (i.e. investigating) is introduced to incorporate the dynamics of urban systems (e.g. Albrechts 2012), which are largely absent in the design approach (Müller et al. 2005). Finally, the issue of communication gains prominence and introduces concepts such as 'participatory planning' and 'co-production' (e.g. Healey 1993 on 'the communicative turn'; Albrechts 2012) for a more communicative and inclusive planning process. Thus, we refer to USE as a wide umbrella-type label that captures the three dimensions of design, investigation and communication, and reflects the complexity of 'urban studies', combining a spatial (e.g. architecture, urban design and landscape planning) and a social sciences perspective (e.g. urban economics, urban ecology and sociology).

USE has evolved to encompass many different academic backgrounds and there have been several initiatives to define a set of common values and principles to guide scholarship and practice, mostly coming from the field of planning. In its 1995 statement, for example, the

Association of European Schools of Planning (AESOP) emphasised that planning education must involve:

> the scientific study of and training in creative conceptual and practical thinking on the relation between society and environment at various territorial levels and in the search, development and advancement of opportunities for purposeful intervention in that relation to ensure sustainable development (AESOP, 1995).

More recently (Geppert & Cottela, 2010), the Global Planning Education Association Network (GPEAN)[1] has ascertained that planning is characterized by a diversity of foci and curriculum contents rooted in cultural, planning and education traditions, and built upon geographically specific approaches. These initiatives and statements acknowledge the inherent complexity and *contested* nature of urban studies and planning education, and challenge the idea of a single model of planning education. However, all cities are subject to the effects of globalised markets, structural economic change and the impacts of climate change (EC-DGRP 2009), as well as scarcity of resources, environmental justice and social equity, and the growing complexity of social, institutional and spatial mechanisms in a globalized society. Thus, the importance of the local context in USE must be balanced with the need to respond to challenges that are "increasingly becoming shared rather than unique" (UN Habitat 2009: 196) thanks to globalization and rapid urbanisation. UN Habitat (2009) notes that many urban studies programmes have moved from geographically specific approaches to more integrated one-world approaches, bringing sustainability to the forefront of urban studies concerns.

Overall the picture is mixed. Despite progress in conceptualising and practising new forms of USE more capable of promoting sustainable forms of urban development, major challenges remain. Again, according to UN Habitat (2009), curriculum reform towards sustainability (i.e. its 'embedding' called for by UNESCO) was still missing in many schools in 2009, and where progress is noted, major gaps remain to be filled: there are schools that teach the technical and analytical aspects of planning but do not incorporate the design and policy approaches, others that do not include the participatory component and others still which do not effectively integrate issues of sustainability, globalisation, social equity or climate change. In summary, the UN decade for sustainable development education has come and gone, leaving much still to be accomplished: 'the global transformation of higher education towards sustainable development has yet to occur' (UNESCO 2014: 31).

[1] AESOP is one of the 9 planning schools' associations that currently form the GPEAN (check: http://www.aesop-planning.eu/en_GB/gpean)

As part of a study on urbanisation trends in Europe and China (URBACHINA, see: http://www.urbachina.eu), this inquiry aims to examine how selected post-graduate top-level programmes in urban studies are adapting their curricula to the notion and requirements of sustainable urban development (SUD), as defined in the following section. We wish to understand to what extent sustainable development notions are embedded in these programmes in terms of overall aims, programme orientation, the skills taught, and topics within their core and elective courses. In this paper we: (1) review an extensive literature to identify the principles and practices characterising the UN decade (DESD), and to determine the themes, concepts, and trends shaping the promotion of SUD; (2) identify the topics and themes considered essential for teaching aimed at the promotion of SUD; (3) explore progress towards urban studies education for SUD within 25 top programmes worldwide; and (4) identify including important differences, persistent challenges, and possible ways forward, to advance higher education for SUD.

The first two objectives are met through a detailed study of academic and policy literature, which shapes our analytical framework (section 2). Section 3 outlines the methodological approach developed to explore the third and fourth objectives through the analysis of 25 programmes, selected to represent some of the best post-graduate level (MA and MSc) programmes in urban studies in both highly urbanized, shrinking (Europe and the USA), and rapidly urbanising regions (China -the focus of URBACHINA- and parts of the Global South: South America and South Africa). The results and significance of the empirical study are discussed in section 4, followed by discussion of their implications (section 5) and conclusions including lessons and enabling factors that need further strengthening if academic programmes in urban studies are to contribute to education for SUD and a reflection on the limitations in our approach and the need for more research (section 6).

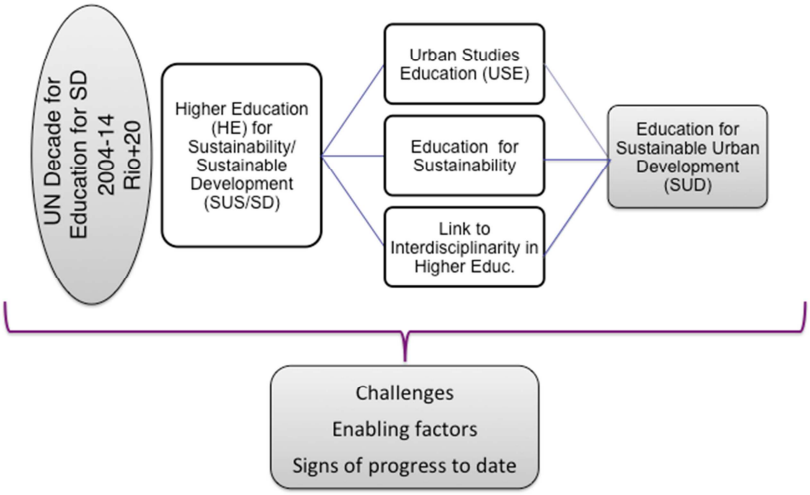
2. Themes, concepts and trends combining sustainability, education and "the urban"

As mentioned in the introduction, "the launch of the Decade of Education for Sustainable Development in 2005 marked the beginning… of an explicit global movement towards improving and reorienting education systems towards sustainable development" (UNESCO 2014: 16). This initiative, which sought to implement one of the fundamental ideas arising from the 1992 UN Conference on Environment and Development, was further advanced at the 20th anniversary UN Conference on Sustainable Development (Rio+20), and its Higher Education Sustainability Initiative. Here governments recognized the need to support higher

education institutions to secure the research, innovation and skills[2] needed to advance sustainable development objectives (Rio+20 HESI 2012).

This section opens with a review of literature on education for sustainable development, on interdisciplinarity in education, and on urban studies education (USE) (see Figure 1) – with the aim of mapping the main themes, concepts and trends in education that influence the "development and advancement of opportunities for purposeful intervention" in pursuit of sustainable urban development (SUD) (AESOP 1995).

Figure 1 – Main sources informing the analytical framework



We start by examining these different bodies of literature and synthesising the main principles and practices of the UN DESD (section 2.1), followed by an analysis of enabling factors and challenges discussed in the literature on urban studies and SUD (section 2.2). We then compare these to define our analytical framework (section 3.3, Table 4).

2.1 Characterising education for sustainable development

As the century progresses, the challenge of sustainable development becomes more formidable and there is growing recognition that technological advances, legislation and policy frameworks are essential but not sufficient: “[t]hese need to be accompanied by changes in mind-sets, values and lifestyles, and the strengthening of people’s capacities to bring about change” (UNESCO 2012: 5).

[2] We use the term ‘skills’ throughout this paper, in line with the language used in literature on education for sustainable development, however, we note that AESOP policy documents on planning education tend to refer to 'competences'.

The role of education is thus crucial, and an understanding of what education for sustainable development entails, has been changing also thanks to the UN decade-long initiative: DESD – it is a 'concept in motion' (UNESCO 2012: 12). Initially seen as content-based, focusing on the reorientation of curricula (UNESCO 2005), it eventually shifted towards new approaches to teaching and related learning processes (Lozano et al. 2013; Ramos et al. 2015; Rose et al. 2015). The point is to engage with the "whole-system" of education through a "whole-institution" approach (UNESCO 2014: 65, 127). Such an approach entails five transformations regarding: 1) research –placing greater emphasis on policy influence; 2) curricula –striving to move beyond specialism; 3) pedagogy –promoting cooperation, student-centred teaching, participatory learning; 4) engagement and leadership –involving faculty, governing bodies, students and the community; and 5) greening operations –campus wide (UNESCO 2014).

The rising prominence of teaching and learning has highlighted a number of dimensions, including: asking critical questions, thinking systematically, clarifying one's own values, exploring the dialectic between tradition and innovation, envisioning more positive and sustainable futures, and responding through applied learning beyond the classroom (UNESCO 2014). These require the promotion of a range of learning-types, including the following which are most frequently associated with education for sustainable development: participatory and collaborative, problem-based, critical thinking-based, discovery-based and interdisciplinary (UNESCO 2014: 66). Ultimately, this education encourages changes in knowledge, values and attitudes with the normative aim of enabling a more just and sustainable society, and progress has been noted, albeit unevenly. While the EU and North America act as examples of good practice ahead of other regions, there remains a need for fine-tuning approaches to different contexts (UNESCO 2012; 2014).

Having reached the end of the DESD, UNESCO (2014: 31) acknowledges that the five transformations linked to a whole-institution approach have, largely, 'yet to occur'. A fundamental obstacle to substantive progress:

> "is that the existing curriculum in higher education has not been developed to examine how we shape a sustainable world… [but] to provide students with an increasingly narrow understanding of disciplines, professions and jobs and is focused on specific knowledge and skills employed in a given area",

as noted by the Association for the Advancement of Sustainability in Higher Education (2010 cited in: UNESCO 2014: 120). When it comes to education for SUD, this obstacle can be significant given that such education combines three broad and contested notions: urban studies, SUD, and education for sustainable development.

2.2 SUD and the education factors helping to deliver it

The difficulty of defining SUD cannot be understated: "[b]y definition, cities are not sustainable, urban dwellers and economic activities inevitably depend on environmental resources and services from outside their built-up area. So what does urban sustainability mean?" (Allen 2009). Yet, the importance of cities and urban policies in achieving *global* sustainable development is unequivocal and urgent (EC-DGRP 2009).

Authors like Camagni (1998: 6) adopt a definition of SUD that echoes the Bruntland's Commission emphasis on inter-generational equity and long-term results:

> "a process of synergetic integration and co-evolution among the great subsystems making up a city (economic, social, physical and environmental), which guarantees the local population a non-decreasing level of wellbeing in the long term, without compromising the possibilities of development of surrounding areas and contributing by this towards reducing the harmful effects of development on the biosphere".

Such broad framework embraces solutions that can both improve the quality of life at local level and respond to the broader global challenges (Herberle 2008). After all, as noted by Hassan and Lee (2015), the many issues at stake in SUD are intertwined and thus hard to separate. Others avoid definitions and suggest key dimensions of curriculum renewal intended to promote SUD (e.g. environmental stewardship, economic dynamism, inter-generational equity, social justice and geographical equity) into the fields of action of architects, planners, geographers, engineers and other graduates (Dimitrova 2014; Haughton 1997; Junyent and de Ciurana 2008). They require that these issues be reflected in evolving spatial systems (i.e., buildings, towns, cities, regions and their infrastructures) and embedded in decisions regarding transportation, land use, urban form, architecture and building construction practices, among others (Wheeler and Beatley 2009). Organisations like UN Habitat (2014b) describe SUD as often equated with more compact, socially inclusive, better integrated and connected cities and territories that are resilient to climate change.

Some master-level programmes in urban studies are responding by questioning long-established tenets of urban planning (e.g. treating cities as products instead of dynamic processes), promoting critical thinking, exploring informal urbanisms, community-building and progressive collaboration, as well as evolving towards more interdisciplinary curricula (Silkes 2014). Such evolution of urban studies curricula can promote a more comprehensive understanding of urban processes and urbanisation dynamics, advance an academic culture

of sustainability, and help adapt planning practice and urban policies to the environmental conditions and societal needs of the future, thus enabling SUD.

In the next sub-sections we outline the findings of a review of scholarly and policy literatures (cf. Figure 1) which led to identify what we will call “enabling factors**”** that appear to be essential in delivering an education aimed at promoting SUD: 1) the overall orientation of the programme and courses offered by higher education institutions (i.e. integration), 2) the skills taught, 3) the attention given to ethics and critical reasoning, and 4) interdisciplinary approaches to teaching and research. These factors respond directly to two of the “whole-system” transformations promoted by the UNESCO (see section 2.1): curricula and pedagogy – i.e., teaching and learning approaches. We discuss each factor in turn.

2.2.1 Integrations

Building upon UN Habitat’s framing of the key debates on urban studies education over the last century (UN Habitat 2009) we identify a nexus between three orientations of USE: design, policy and management. These can be conceptualized as the three orientations (or pillars) of USE aimed at promoting sustainable urbanisation. They are not exclusive and are present, in different combinations, in all programmes and courses offered by higher education institutions. The literature reviewed supports the idea that programmes with a stronger sustainability focus have a balanced mix of these three orientations (Krieger 2009; UN Habitat 2009; Bodenschatz 2011; Senbel 2012).

Design, with a focus on planning instruments such as neighbourhood-scale projects, master plans and regional plans, is the first pillar, embracing the traditional fields of urban planning, architecture, urban design, spatial planning and landscape architecture. It is an essential dimension of USE. However, scholars acknowledge the prescience of social and environmental concerns and call for addressing the sustainability challenges underscored by the social sciences (Yüksek 2013; Bodenschatz 2011). While urban planning must be informed by the social sciences, it differs from these in fundamental ways, including its persistent ties with practice – thus with spatial planning and urban management – as well as its normative nature, concerned with "how the world should be" (Beard and Basolo 2011). Thus, **policy** becomes the second SUD education pillar, with a focus on social sciences' concerns and challenges, as urban planning stands at the interface between technical, socio-spatial and decision-making processes (Dimitrova 2014). The third SUD education pillar is **management** - with a focus on urban dynamics and change, including strategic planning and futures studies. Urban strategic planning, future thinking, and visioning, are management tools that differ from conventional urban planning and can be more effective to

address the complexity of urban dynamics and manage processes of city change (UN Habitat 2007; Rohweder & Virtanen 2009). Strategic plans, however, do not dispense with spatial planning (UN Habitat 2007), thus reminding that the first pillar remains essential.

The integration of - and balance between - physical design, social science/policy approaches and urban management issues is key to effectively incorporate sustainability in urban studies. Nevertheless, according to the literature there is an enduring tension between design and policy orientations in USE. Programmes with a focus on urban design have gradually moved towards an increased focus on policy and social science. During the last decade of the 20th century, however, there has been a resurgence of design in a number of schools (UN Habitat 2009), thus Senbel (2012) argues that literacy in urban design is necessary for understanding the spatial implications of policy decisions. Moreover, in order to addresses the complexity of urban dynamics and deal with the dynamic processes of urban areas, an important focus on implementation and management has been adopted by several new post-graduate programmes (Silkes 2014). Such programmes favour future thinking and visioning (Rohweder & Virtanen 2009), dynamic, inclusive and participatory strategic planning (UN Habitat 2007) as part of an innovative agenda towards SUD. In practice, however, UN Habitat (2009) notes that some schools do not fully integrate all these dimensions.

2.2.2 Skills

Future graduates need to respond to new societal challenges and expectations by dealing with "complexity, uncertainty, change, other disciplines, people, environmental limits, whole life costs, and trade-offs" (Cruickshank and Fenner 2012: 249). Based on the literature and debate on urban studies and education for sustainable development (e.g. UN Habitat 2009; Edwards and Bates 2011; Cruickshank and Fenner 2012; Du et al. 2013) we identify a second enabling factor for education promoting SUD: a set of skills that are being, or ought to be, taught and practiced in urban studies and research. These may be grouped into three categories: analytical, technical, and the combination of experiential and negotiation skills. Table 1 summarises the main aspects and skill-types for each category, which the literature identifies as crucial, but which cannot be definitive, given the highly diverse and dynamic understanding of SUD itself.

Table 1 – Enabling SUD: Analytical, Technical and Experiential/Negotiation Skills*

ANALYTICAL
· Global/Regional/local interdependencies

· History of planning/urbanism (movements & theories)
· Integration of theory and practice
· Interdisciplinarity
· Methods (quantitative, qualitative, spatial analysis)
· Rapid urbanisation & urban informality (incl. global South)
· SUD & sustainable planning
· Systemic thinking (holistic & integrative)
· Theoretical & critical reflection
· Visual literacy
TECHNICAL (specifically aimed at enabling SUD)
· Design-applied technologies (e.g. CAD)
· Engineering and construction
· Management & strategic planning/urban futures
· Spatial planning instruments (plans & projects)
EXPERIENTIAL & NEGOTIATION
· Community work
· Cross-sector collaboration
· Direct international experience
· Field work/Contact with real life practice
· Participatory/deliberative approaches
· Team work

* in alphabetical order

Cross-cutting issues in terms of skills include: the requirement for merging theory and practice, a geographical focus on the local-global nexus, and participatory and deliberative approaches. Merging theory and practice in urban studies concerns the need to develop capabilities to translate knowledge and analysis into action (Campbell 2012). A proper mix of theory and practice is required in order to combine critical reflection, phenomenological experience, and procedural knowledge (Geppert and Verhage 2008) and is essential to develop students' ability to engage in ethical reflection, and reflective practice (Schön 1983, Frank 2002). A tension between theory and practice, however, underpins the debate on what should be the ideal core curriculum and which skills are most useful: academics tend to overemphasize the abstract, while practicing professionals tend to emphasize the instrumental (Edwards and Bates 2011).

Literature and policy documents also highlight the geographical focus on the local-global nexus required in order to provide future professionals with alternative theoretical frameworks that acknowledge and address new urban contexts and the now-dominant conditions of urban life in many cities – mostly, but not only, in the global South (Watson 2009). As discussed in Section 1, urban sustainability is local in nature but needs to acknowledge regional and global interdependencies (Vojnovic 2014; Wals and Corcoran, 2006). USE needs to contribute to an understanding of the dynamics shaping 21st century

cities and bring to the fore planning concerns and knowledge about socio-spatial trends and challenges of rapid urbanisation and urban informality, climate change and ecological concerns. It also needs to help develop the understanding of participatory planning issues in multicultural contexts (UN Habitat 2009). There is, however, a gap between more traditional approaches to planning – mostly shaped by planning theories and practice originated in the global North – and the everyday conditions of urban life (including poverty, inequality, informality and spatial fragmentation) in a growing number of cities around the world (Watson 2009).

Further, in terms of skills promoting participatory processes and deliberative approaches is indispensible to achieve equity in urban processes and decisions, a core principle of SUD. Advocacy planning (Davidof 1965), deliberative and participatory planning (Forester 1999), along with social learning (Bandura 1971) become the cornerstones upon which many planning schools have developed their curricula and the basis for current bottom-up theories and initiatives of civic engagement in governance strategies and planning processes (Healey, 1997; UN Habitat 2009). Endorsing collaborative planning in USE, through teamwork, workshops and community projects is therefore indispensable to the promotion of SUD.

This echoes with the emphasis placed on key learning processes in education for sustainable development, including those of collaboration, dialogue and of community engagement: helping students to have experiences beyond the classroom, learn about local issues and contribute to local solutions. According to UNESCO's Global Monitoring and Evaluation Questionnaire "the top three types of learning, considered to be most conducive for education for sustainable development, are participatory and collaborative learning, critical thinking and problem-based learning" (UNESCO 2014: 65).

2.2.3 Ethics and critique

UNESCO's top learning types are equally relevant to education for SUD. Here the third enabling factor refers to the combination of ethical perspectives and critical reasoning (listed as 'analytical skills', Table 1). In the education for sustainable development literature, this combination helps to advance the change in teaching and learning processes, bringing in approaches that "stimulate pupils to ask questions, analyze, think critically and make decisions", that are cooperative rather than competitive (UNESCO 2014: 65). Ethics is considered inseparable from the principles of sustainable development, requiring "changes in knowledge, values and attitudes… enabling a more sustainable and just society for all" (UNESCO 2014: 9), and essential to develop and advance the "opportunities for purposeful

intervention" that can "ensure sustainable development" (AESOP 1995; see also Holmberg et al. 2008). Critical reflection and values clarification are thus core components of education for sustainability (Du et al. 2013): the aim is to teach the next generation to ask critical questions, clarify one's own values, envision more positive and sustainable futures, think systemically, respond through applied learning, and, explore the dialectic between tradition and innovation (UNESCO 2014). The ethos of education for sustainability is grounded in the promotion of values and attitudes that will enhance sustainability and justice, and thus – like sustainable development itself – its ethos is fundamentally normative

These principles and the teaching and learning of these skills is essential if USE is to engage with the normative foundations of SUD, such as "human flourishing and the just city", which will always be contested (Friedmann 2008). The introduction and, or, strengthening of the ethical and critical reasoning dimensions in urban studies responds to the challenges posed by increasingly complex social and spatial interactions that require dealing with emerging issues related to social and environmental justice, formerly neglected by canonical urbanism (Dimitrova 2014; Silkes 2014). Overall, the focus on sustainable development has extended the traditional concerns of USE – as taught by most conventional programmes in architecture and planning – from physical design to policy and social science topics (Dimitrova 2014). It has also led to a focus on outcomes-oriented learning, moving beyond simply changing the content, towards a more "holistic approach to curriculum renewal" (Rose et al. 2015: 237; see also Mälkki and Paatero 2015).

2.2.4 Interdisciplinarity

Sustainability is inherently interdisciplinary, requiring integrative and holistic approaches, systemic thinking and cross-sector collaboration (Rohweder and Virtanen 2009): "[i]n short, a shift from scientific specialization to dialogue among disciplines" (UNESCO 2014: 124). It implies changing many of our "teaching paradigms to help to overcome the mono-disciplinary barriers to change" (Ramos et al. 2015: 4). Thus, our fourth enabling factor for an education that promotes SUD refers to the broad notion of "interdisciplinarity", understood as a "synthesis of knowledge" (Davoudi 2010: 33), as the aim to structure multiple sources of knowledge around a common topic, involving the sharing of tools and methods across disciplines, as well as cooperation and the willingness to learn from and to understand each other, requiring reflexivity and the willingness to give up some disciplinary territory (Blanchard and Vanderlinden 2010).

Despite wide reference to it, interdisciplinarity faces many challenges. Traditional disciplines are entrenched academic territories (Mitrany and Stokols 2005) with resilient disciplinary

boundaries and discreet epistemologies, methods and discourses (Bradbeer 1999), subscribing to particular worldviews, tools, exempla, concepts, and theories (Feng 2012). But it is seen as a necessity for contemporary knowledge production and for professional life in general, when disciplinary approaches often are too narrow: this is especially true of urban complexity, which cannot be understood from the perspective of a single discipline (see discussions in: Beard and Basolo 2011; Friedmann 2008; Luederitz et al 2015; Trencher et al 2014).

Following Petts et al. (2008), we refer to *interdisciplinarity* as a concept that occupies the broadest position on the spectrum between: *multidisciplinarity* (i.e. a number of disciplines coming together but each working independently with their own frame of reference and methods (Davoudi 2010; see also: Panagopoulos et al 2015)), *crossdisciplinarity* (used almost as synonymous of multidisciplinarity), and *transdisciplinarity* (involving organisation of knowledge around complex societal subjects, or real world problems, rather than disciplines (Davoudi 2010) as well as involving non-academic actors in the production of knowledge (Després et al. 2011).

However, we acknowledge that in practice definitions remain open and porous (and some argue this is inevitable, even desirable) and subject to simplifications and misuse, but also to cultural differences in the interpretation of their purpose and reach (Lang et al., 2012). Thus, by choosing as a label for this enabling factor the most commonly used term "interdisciplinarity" – after Petts et al. – we aim to include the widest possible range of interpretations, and attempts to address the integration of knowledge, concepts and methods from different scientific disciplines.

3. Methods

Having synthesised the characteristics and challenges of education for sustainability and for SUD, the second part of our inquiry seeks to explore progress in education towards SUD in practice (our third objective), answering the core question: to what extent are SUD notions embedded in urban studies programmes.

3.1 Selection of a sample of programmes in urban studies

Selecting the sample for our third objective was made especially challenging due to the interdisciplinary nature of "urban studies" (discussed above), which makes it difficult for these programmes to be identified, and to score high, on international ranking systems. In

particular, there are problems with the World Universities Rankings.[3] First, they do not offer an adequate coverage of some graduate programs, remarkably on architecture and planning; second, coverage of Urban Planning and Architecture is available but just regionally for the US and the UK, never for Europe as a whole or for Latin America, or Asia; and third, the rankings tend to reflect a classic approach within the fields of planning and architecture and give less attention to newer programs with a more interdisciplinary approach.

The selection of our sample was therefore based on the method of judgment sampling (non-random sample, selected based on the opinion of experts), drawing first on a survey involving 14 members of the URBACHINA consortium and its Scientific Committee (including scholars from Canada, China, France, Italy, Portugal, Sweden and the UK), and then on snowball sampling involving an additional 45 international scholars. This survey was conducted between 10/3/2013 and 10/4/2013. We then used international rankings to provide an additional perspective on the quality of universities hosting the programmes.

Respondents were asked to list 10-15 graduate programmes (in China, the EU and the rest of the World), focusing on what they considered to be among the best (the most prestigious amongst peers) programmes in the broad field of Urban Studies. Overall, we sent the survey to 59 individuals and collected 21 valid responses (36% response rate). The respondents identified programmes in a total of 181 universities (74 in Europe; 24 in China; 83 in the rest of the World), which were ranked by the number of times they were mentioned. From this larger sample we selected the 25 top ranking programmes pondered by criteria of "excellence according to peers", and which represented: a) well established programmes; b) a balanced sample of the diverse faculties represented; and c) a balanced geographical distribution of the rest of the World group of programmes: here we opted for splitting this group into North American (USA) programmes and programmes of the Global South (GS). The latter were purposely selected, even if they scored less well than other programmes in the USA and elsewhere. Finally, we compared the resulting selection of 25 programmes with the world ranking of the university they belong to. We confirmed that the final sample is representative of some of the most prestigious universities in the four regions, offering a valid judgment sample for our qualitative study.

[3] We have used: the QS World University Rankings WORLD 2014 (world-a); the Times Higher Education World University Rankings 2014-2015 (world-b); and the QS World University Rankings BRICS 2014 (BRICS) where applicable.

We selected 25 post-graduate (Master level) programmes in urban studies (8 in Europe; 9 in China; 4 in the USA; 4 in the Global South) – considered among some of the best (and sometimes also innovative) in their country and world region (Table 2). They can be grouped into five broad types – urban and regional planning (9 programmes); urban development and management (6); urban planning and design (5); architecture and urbanism (5); and geography (2) – reflecting a diversity in terms of planning, management and design (i.e. the three orientations of USE mentioned above). The programmes are rather diverse in terms of curricular structure, ranging from 3 to 15 courses in the core curriculum component, and from none to 10 required electives. Also, regarding final thesis or dissertation, for example, this is required in most EU, USA and GS programmes, while in China only one-third of the programmes require it.

Table 2 – Selected Programmes

	University/School – EUROPE	Master programmes	World University Rankings*
EU1	TU Delft University of Technology - Faculty of Architecture, THE NETHERLANDS	Architecture, Urbanism & Building Sciences	86 (world-a) 71 (world-b)
EU2	University College London (UCL) The Bartlett Development Planning Unit, UK	Urban Development Planning	5 (world-a) 22 (world-b)
EU3	University of Oxford, UK	Sustainable Urban Development	5 (world-a) 3 (world-b)
EU4	University of Cambridge, UK	Architecture & Urban Studies	2 (world-a) 5 (world-b)
EU5	Institut d'Urbanisme de Paris (IUP) Centre Franco-Chinois Villes et Territoires, FRANCE	Urbanisme et aménagement	Not ranked
EU6	London School of Economics, Department of Geography and Environment, UK	Urbanisation & Development	71 (world-a) 34 (world-b)
EU7	Erasmus Univ. Rotterdam, Institute for Housing and Urban Development Studies, THE NETHERLANDS	Urban Management & Development	90 (world-a) 72 (world-b)
EU8	Technische Universitat Berlin, GERMANY	Urban Design	192 (world-a)
	University/School – CHINA	**Master programmes**	**World University Rankings***
CN1	Tongji University - College of Architecture and Urban Planning	Urban Design	23 (BRICS) 393 (world-a)
CN2	Nanjing University, School of Architecture and Urban Planning	Urban Planning	251-275 (world-a)
CN3	Tsinghua Urban Planning & Design Institute	Architecture (China Builds programme)	1 (BRICS) 393 (world-a)
CN4	University of Hong Kong	Urban Planning	28 (world-a) 43 (world-b)
CN5	Peking University - School of Urban Planning and Design	Urban & Regional Planning	2 (BRICS) 57 (world-a) 48 (world-b)
CN6	Chinese University of Hong Kong - School of Architecture	Urban Design	46 (world-a) 129 (world-b)
CN7	Xi'an Jiaotong-Liverpool University, Department of Urban Planning and Design	Urban Planning & Design	19 (BRICS) 47 (world-a) 276-300 (world-b)
CN8	South China University of Technology	Urban Planning & Design	Not ranked

CN9	East China Normal University, School of Resources and Environment Science	Human Geography	Not ranked
	University/School – USA	**Master programmes**	**World University Rankings***
US1	UC Berkeley, College of Environmental Design. USA	City & Regional Planning	27 (world-a) 8 (world-b)
US2	Columbia University - School of Architecture, Planning and Preservation, USA	Urban Planning	14 (world-a) 14 (world-b)
US3	Harvard University - Graduate School of Design, USA	Urban Panning	2 (world-a) 2 (world-b)
US4	MIT - Department of Urban Studies and Planning, USA	City Planning	1 (world-a) 6 (world-b)
	University/School – Global South	**Master programmes**	**World University Rankings***
GS1	El Colegio de Mexico, MEXICO	Estudios Urbanos	n/a
GS2	Universidade Federal do Rio de Janeiro, Instituto de Pesquisa e Planejamento Urbano e Regional, BRAZIL	Planejamento Urbano e Regional	271 (world-a) 21 (BRICS)
GS3	Pontificia Universidad Católica de Chile Instituto de Estudios Urbanos y Territoriales, CHILE	Desarrollo Urbano	167 (world-a)
GS4	University of Cape Town, School of Architecture, Planning, and Geomatics, S. AFRICA	City & Regional Planning	141 (world-a) 124 (world)

* World-a = QS World University Rankings WORLD 2014; World-b = the Times Higher Education World University Rankings 2014-2015; BRICS: QS World University Rankings BRICS 2014.

3.2 Building blocks and key issues for SUD

The enabling factors identified in section 2.2 support the finding of the UN DESD whereby to embed sustainable development in the curricula requires more than designing and including new contents in a study programme. However, content naturally matters and the second objective of our inquiry is to identify the issues considered essential to an education promoting SUD, in order to examine and compare the content of the 25 selected top programmes. To identify SUD issues we did a preliminary scan of all the graduate courses of the top programmes selected and listed in Table 2 . We created a list of 36 issues representative of the main focus of each course curricula examined (Table 3), reflecting common associations and labeling both from the course data and from the literature on SUD and USE discussed above.

The SUD and USE literature discussed sustainability issues from the perspective of spatial planning, society (often including cultural dimensions), environment and the economy. In order to categorize the 36 issues, we adopted a simple structure of four building blocks for SUD. This included the three elements of sustainability (society, economy, environment – to which we added the explicit mention of resources (Hassan and Lee 2015; UNESCO 2012)) and a fourth element that combined urban-specific dimensions at the core of USE literature: planning, design and governance. The result is presented in Table 3. The list is not meant to

be exhaustive, but it does reflect current thinking about the more universally-relevant SUD issues (see Section 1) in academia and in higher education.

The complex, intertwined and systemic nature of SUD is extensively discussed by Hassan and Lee (2015) who show how that three traditional elements of SD overlap in the specific case of urban development. We therefore acknowledge that our four blocks are closely interconnected and partly overlapping. The social dimension of urban poverty, for example, can be understood only if its cause and effects, which are linked to the economy, the environment and planning/governance, are also explored. It is precisely their close(r) *integration* through the re-design of curricula that is required in order to promote education for SUD. All care was taken to create an accurate list of issues and to allocate them to the most relevant block (society, economy, environment & resources, and planning, design & governance), nonetheless we acknowledge that there will always be space for intersecting dimensions, and that some margin for interpretation is inevitable.

Table 3 – Building blocks of higher education for SUD and related issues*

SOCIETY
· Demographic trends
· Gender & identity issues
· Health/wellbeing
· Informal settlements
· Multiculturalism, diversity & social cohesion
· Poverty
· Public participation & stakeholders' engagement in planning processes
· Right to the city (including public space issues)
· Security (re. urban violence & conflict)
· Social justice/equity/inequality/exclusion
ECONOMY
· Circular economy
· Employment/unemployment
· Finances & SD
· Green economy
· Informal economies
· Production & consumption patterns
ENVIRONMENT & RESOURCES
· Climate change & disaster risk prevention
· Energy & urban SD (e.g. energy transition, 'clean' energy systems
· Environmental responsibility
· Food & urban SD (e.g. urban farming)
· Nature, ecology, biodiversity
· Planning & the natural environment
· Resources use/conservation/depletion
· Urban footprint & low-carbon cities
· Urban metabolism

· Waste management & urban SD (e.g. waste-to-energy systems)
· Water & urban SD (e.g. water recycling & reuse)
PLANNING, DESIGN & GOVERNANCE
· Green buildings & sustainable construction
· Infrastructure, green infrastructure & ICT
· Land use & spatial distribution of urban activities
· Planning & the built environment
· Post-disaster management
· Transportation, mobility & urban SD (e.g. TOD)
· Urban form & SD (e.g. compact cities, polycentric regions, new urbanism)
· Urban governance & political processes
· Urban-rural relationships

* in alphabetical order

3.3 Analytical Framework

In sections 1 and 2 we revealed common challenges between what is considered crucial in the review of the UN Decade of Education for Sustainable Development (DESD) and discussions around USE and SUD. In this section we bring together these combined insights to propose an analytical framework that will be used to analyse the extent to which 25 master programmes are contributing to shape education for SUD. Table 4 summarises our findings and proposes a five part analytical framework, which frames our enabling factors and building-blocks (detailed in the first three columns), in relation to the notion of whole-system transformations of DESD (last two columns).

In gauging the results of DESD, UNESCO (2014) highlights the notion of whole-system transformations, which seeks to promote a shift in perspective as to what constitutes the necessary change. In particular we note the need to combine two “transformative dimensions”: a) changes in the content of curricula (the ‘re-orientation’ that was the original focus of DESD), with b) the need to engage with various “transformations” in the approach to - and aims of - teaching and learning, with a view to encourage change in mindsets, values and lifestyles. There is a close relationship between DESD’s dimensions and change-types (last two columns, Table 4), and the five enabling factors and related approaches and challenges identified from our literature review (first three columns). Enabling factors 1-Integration and 5-Sustainability Blocks are primarily about delivering transformation through changes in the content of curricula. While the three non-urban specific enabling factors (2-Skills, 3-Ethics and Critique, and 4-Interdisciplinarity) focus on the delivery of changes in approaches to teaching/learning. Interdisciplinarity, however, is also expected to lead to changes in curricula. Column four lists the questions that drive the analysis of the empirical data described below.

Table 4 – Analytical framework for the inquiry

Enabling factors		Specific approaches and challenges	*Questions for programmes sample*	DESD's Transformative dimensions	DESD - Main type of change sought
1. INTEGRATION	3 Programme orientations / Integration (section 2.2.1)	- Physical design - Social sciences and policy approaches - Urban management	*Do programmes reveal a balanced mix of "orientations"?*	Curricula*	Content-based change / reorientation of curricula
2. SKILLS	3 categories for 20 skills and types of learning – combining principles and practices from education for SD and for SUD (section 2.2.2 and Table 1)	Analytical: - Improve merging of theory and practice; - Improve balance between North and South theories - Explore dialectic between tradition and innovation Technical: - Enable sustainable design, management and planning Experiential & negotiation: - Collaborative and participatory processes - Problem based, beyond the classroom/applied learning (real-world issues)	*Do programmes reveal a balanced mix of "skills"?*	Approaches to teaching/learning	Change in teaching/learning approach
3 ETHICS & CRITIQUE	Ethics and critical reasoning (section 2.2.3)	Ethical values: - Clarify one's own values - Reflect on normative dimension of sustainability and SUD - social/economic equity - environmental responsibility - gender issues - multiculturalism	*Do programmes' objectives support "ethical values" and ethical reflection?*	Approaches to teaching/learning and Curricula	• Change in values • Change in teaching/learning approach • Content-based change / reorientation of curricula
		Critical reasoning: - Ask critical questions - Think systematically	*Do programmes' objectives support "critical reasoning"?*		
4 INTERDISCIPLINARITY	Interdisciplinarity (section 2.2.4)	- "Interdisciplinarity" as the concept occupying the broadest position on the spectrum between multi/cross and transdisciplinarity	*Do programmes' objectives support "interdisciplinarity"?*	Approaches to teaching/learning and Curricula	• Change in teaching/learning approach • Content-based change, reorientation of curricula
5 SUSTAINABILITY BUILDING-BLOCKS	Four SUD building-blocks and related issues (section 3.2 and Table 3)	- Society - Economy - Environment & Resources - Planning, Design & Governance	*What range of issues and themes are included in the curricula of our sample programmes?*	Curricula	Content-based change / reorientation of curricula

* Although the main transformation will be of curricula's content, altering programme orientation would be expected to lead to changes in all other categories in our framework

3.4 Data Collection: Netnography and Survey

For an evaluation of the selected Master programmes we conducted a netnography (Kozinets 2010)[4] between 1/10/2014 and 20/1/2015, drawing on two types of data available on the programmes' websites: (1) the explicit statements and implicit aims[5] of the programme, as described on the programmes' and departments' webpages; and (2) the more detailed information obtainable from the breakdown of each programme into individual courses and the content analysis of their curricula. The latter was hindered by limited access to courses' syllabi and in some cases we had to ask the Faculty or Department for additional information; Chinese programmes in particular, had limited information on the web. This data was then examined in light of the five enabling factors of our analytical framework (Table 4).

This netnography builds on the assumption that programme websites reflect the way departments intend to present these programmes to the outside world, and that together with the choice of core courses - they reveal what is deemed important (and attractive to students). Based on a close reading of the stated objectives on the websites, salient themes and statements about programmes, we were able to determine both the programmes' dominant orientation and the categories and types of skills that each programme tends to favour. We could also verify if interdisciplinarity is explicitly mentioned, as well as if critical reasoning and an ethical/normative component are explicit or implicit in the programmes' goals. In addition, a content analysis of the descriptions of each programme courses (both core and elective) identified the sustainability topics and themes covered by each programme's curricula. As an illustration, Annex 1 shows a few examples of the programmes' goals, extracted verbatim from the respective webpages.

It should be noted that some descriptions of programmes and/or courses tend to be generic and therefore will not fully express the actual motivation towards sustainability and SUD. This is especially the case of practical courses under the guidance of advisors, as well as internships and field work, which are critical to develop communication skills, ethical reflections and more. Considering however that websites reflect the way departments intend to present their programmes to the outside world, the relevance (or lack therein) attributed to

[4] Responding to the growing importance of the internet as a site for research, netnography is a qualitative, interpretive research method that adapts ethnographic techniques to the study of social media (Kozinets 2010). It is a methodology especially designed to study cultures and communities online.

[5] By *implicit aim*, we mean, for example, assuming that a programme addresses 'Social/economic equity' based on the statement that one of its goals is to teach students notions about "social and spatially just urban governance" (EU2).

the various sustainability dimension in our analytical framework is deemed significant in itself.

In order to enrich the analysis and address some of these challenges, we conducted a follow-up survey[6] targeting the directors and colleagues involved in the management of the 25 programmes. We received valid responses for 13 programmes. The survey consisted of 8 questions evaluating: (1) priorities influencing the focus of the programme; (2) integration of sustainability dimensions; (3) promotion of educational skills capable of enabling SUD; (4) promotion of interdisciplinarity. There were also specific questions to check if the data resulting from our netnographic evaluation of the programme was consistent with the respondents' direct knowledge and views. All results (netnography and survey) are presented in section 4.

4. Analysing 25 Programmes from Europe, China, USA and the Global South

4.1 Integration: programmes' orientation

Based on the statements and objectives outlined in the programmes' descriptions on the web (e.g. Annex 1), we used netnography to evaluate the mix of orientation(s), as summarised in Table 4, row 1. We assigned between 0 and 2 points to each category (e.g., a programme could have 2 points in Design; 0 points in Policy; and 1 point in Management). Then we aggregated the data by world region and translated it into percentages, which reflect the cumulative weight of each orientation (e.g., 100% in Policy means that all programmes on a given region had 2 points on the category Policy).

Figure 2 (left) shows that taking 'All' 25 programmes: management is the strongest pillar (70%), followed very closely by design (68%) and finally policy (54%). However, regional differences are significant. Chinese programmes stand out due to its low values on policy (17%) and management (44%), while being close to the top on the design dimension (83%), just below the USA, which fares highest in the two dimensions - design (88%) and policy (88%). The Global South (GS) programmes have the strongest program orientation towards management (100%) and policy (88%) and the GS and Europe are the only regions with a lower value for design when comparing with the other orientations. The USA programmes have the most balanced mix of the three orientations. These results reflect the adaptation of educational programmes to the most urgent local (context specific) needs as well as the national interpretation of the role of urban planners, architects and urbanists. Programmes in

[6] The survey was conducted between 24/03/2015 and 9/04/2015.

the GS, for example, seem to respond to the experience of rapid urbanisation, multi-actor scenarios with often failing states in terms of service provision, and social and spatial exclusion of large groups within society, leading to greater informal calls for a strong policy framework (often in place but not enforced).

A comparison between our findings and the informed opinion of programme directors, as expressed in the survey, reveals that the design orientation is the most valued overall followed by policy and management. This indicates an over-representation of the relevance of the management dimension in programme description revealed through the netnography. Also according to the statements of programme directors, the policy component is stronger than our estimates. These discrepancies are explained by the fact that several programmes are currently reviewing their curricula and also because policy, design and management issues are often addressed, in different combinations, in students' dissertation theses or final projects.

4.2 Skills Enabling SUD: analytical, technical and experiential and negotiation skills

The second analysis refers to skills (Table 1 and table 4, row 2). The netnographic study of each programme curricula assigned 1 point if there was an explicit reference to a given skill. This binary measurement (1-0) allowed us to measure the proportion (expressed in percentage) of topics covered within the three skills categories (Figure 2, right) in each region (eg. 50% of all GS programmes focus on analytical skills, but only 25% on technical skills).

Results for 'All' 25 programmes show that analytical approaches are the most common (57% of topics covered), and all regions show quite similar results (though USA stands out slightly (63%)). Technical skills are strongest in China (50%). Experiential and negotiation skills are mostly favoured in European and USA programmes (48% and 42% respectively), and apparently less so in the GS and China. The data allows also a closer look within each category of skills enabling SUD, listed in Table 1. Regarding analytical skills, programmes in the four regions are strong at *integrating theory and practice*, as well as in teaching *methods* (quantitative, qualitative, spatial analysis). European programmes are stronger in *theoretical & critical reflection* and in teaching *sustainable planning* and weaker in *history of planning/urbanism (movements & theories)* and in *visual literacy,* while in all other regions programmes are stronger in *history of planning/urbanism (movements & theories)*. With regard to technical skills, while the focus of European programmes is on *management & strategic planning/urban futures*, in all other regions the focus is on *spatial planning instruments* (e.g. neighbourhood-scale projects, master plans and regional plans). Finally,

regarding experiential & negotiation skills, programmes in all regions except the GS are stronger in *field work and contact with real life practice*. European programmes are also strong in *participatory & deliberative approaches* to planning, and in promoting *team work*. Programmes in all the regions are weak in providing *direct international experience*.

Answers to the survey confirmed the overall results of the netnography. Comments by European directors mainly suggested that experiential and negotiation skills were underrepresented (the netnography suggests this is a strong focus mainly for the EU sample). Some respondents from the GS also suggest giving greater importance to these skills, explaining that interdisciplinary working groups and fieldtrips for example, contribute to them – yet we note that little is done to convey this in the programme description.

4.3 Objectives Supporting Interdisciplinarity, Ethical Values and Critical Reasoning

The third use of netnography relates to the enabling factors in rows 3 and 4 of Table 4: to identify statements supporting interdisciplinarity, ethical values and critical reasoning. While support for interdisciplinarity and critical reasoning was identified and registered by a simple binary notation (1-0), objectives supporting ethical values were determined by summing up the explicit or implicit references to six key issues (present or not) in the programme description: clarity of values; social/economic equity; environmental responsibility; gender issues; multiculturalism; normative nature of planning and sustainability (Table 4, row 3).

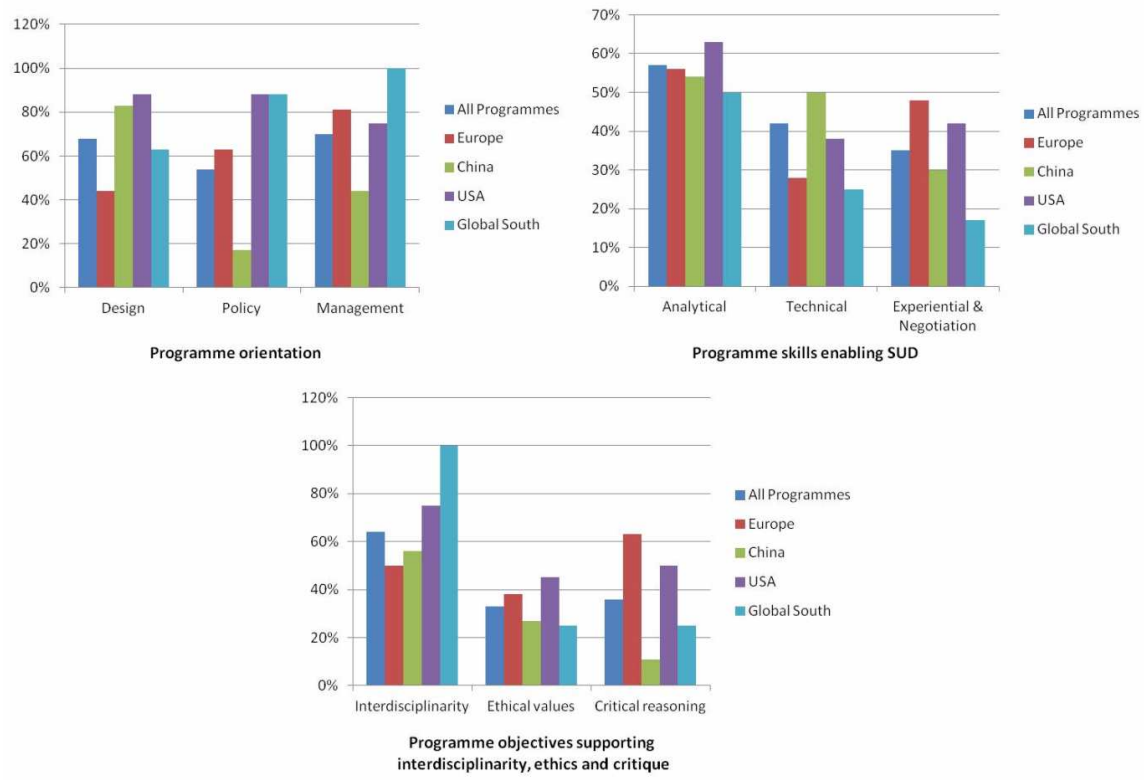
Figure 2 (bottom) shows that stated objectives supporting interdisciplinarity are emphasised in 64% of all programmes, and are very strong in GS programmes, and relatively weak in European ones. The concern with ethical values and critical reasoning in all programmes is significantly lower (33% and 38% respectively). The commitment to address ethical values is consistently low in all regions, while critical reasoning objectives have discrepant values – very low on China (11%), and comparatively high in Europe (63%). Specifically, all regions emphasise *environmental responsibility* and pay less attention to *multiculturalism* and *gender issues*; USA programmes are the strongest in addressing *socio-economic equity*.

In the survey, ethical values came out as an important, albeit often difficult to include in curricula and teaching approaches. While a Chinese respondent recognized that "the neglect of ethical values is an undeniable fact" in their programme, another stated that a major goal of their programme is to nurture future professionals with an ethical commitment towards society. Similarly, in the GS ethical values in education were said by one respondent of the GS to be an issue "we need to discuss and try to emphasize in our

programme", while another respondent, from the USA, stated the intention to further increase ethical components in existing courses.

Interdisciplinarity was almost unanimously considered important by programme directors, and has driven curricular changes in the programmes over the recent years. These changes are often related to partnerships with other programmes. Interestingly, major limitations to further interdisciplinarity were reported in relation to internal formal constraints, such as the limited number of credits and the short duration of programmes, but also the time and energy needed to coordinate and integrate different disciplines/programmes, coupled with the lack of human resources, especially teachers with an interdisciplinary background.

Figure 2 – Results: Programmes' orientation, skills enabling SUD, and objectives supporting interdisciplinarity, ethical values and critique (in percentage)



4.4 Key Sustainability Issues Covered by Courses

The final data analysis related to course content (row 5 of Table 4). We searched for references to the 36 sustainability issues (grouped within 4 building blocks -society; economy; environment and resources; planning, design and governance -Table 3), by examining the 25 programme statements and the syllabi of their core and optional courses. Limited access to curricula information online meant we often had to ask the Faculty or

Department for additional information. We assigned 1 point per issue present (explicitly or by inference) in a course description[7]. The analysis gave an indication of how urban studies are integrating sustainability issues, and thus responding to the UN challenge (section 1).

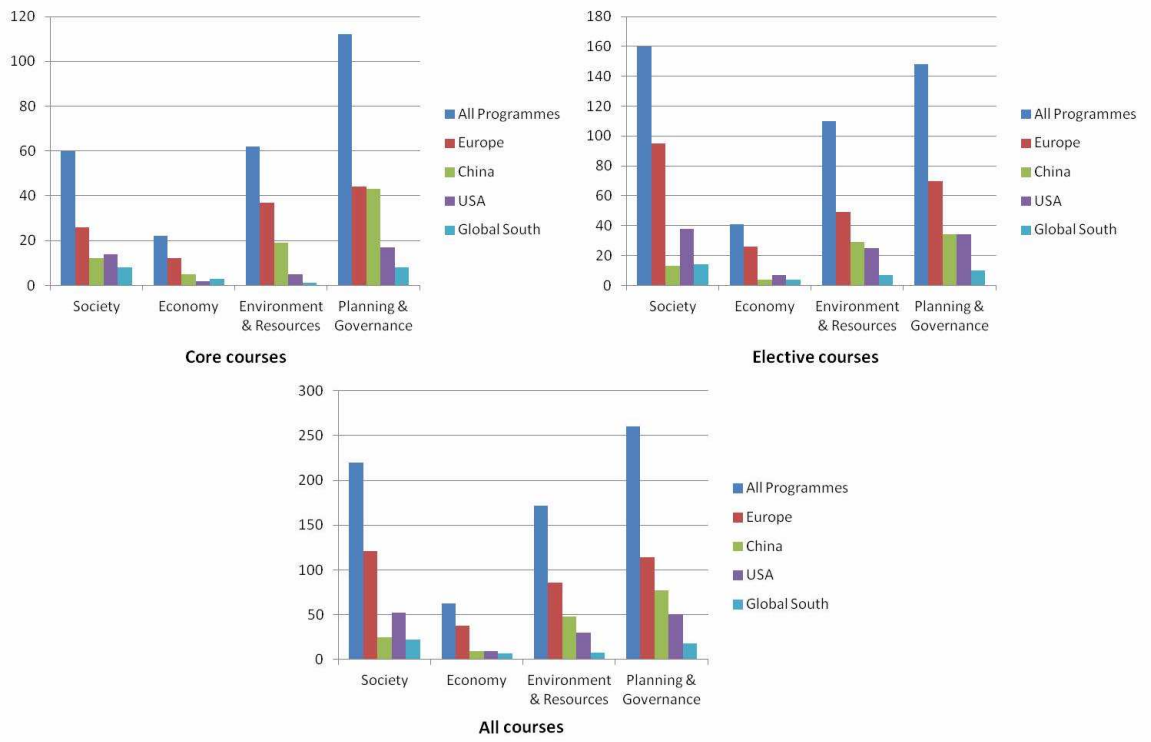
Results (Figure 3, left) show that the programmes' *core* curricula in the four regions and for all programmes are all especially strong in terms of Planning and Governance. References to Societal and Environmental issues were identified just half as many times, and finally Economy stands out as the weakest SUD block. The frequency of Societal themes greatly improves when considering *elective* courses, scoring higher than Planning and Governance, (except for China), while references to Economy-related issues remain weak. In line with this, the All courses graph (bottom) shows that in all regions except China, Societal themes become more relevant than Planning and Governance, even if by a very small margin in the USA and the Global South. Economic issues remains the least touched upon in the programmes. Additional insights arise when comparing the frequency of issues for each SUD block, within each region (see Table 3). Regarding societal issues, programmes in all regions except in China cover predominantly *public participation in planning processes*. In China, preference goes to *social justice/equity,* which is also common in programmes in Europe and USA, but not the GS. For economy, the most frequent issue in all the regions is *production & consumption patterns*. As for environment and resources, which show a weak coverage in the GS, the main topic considered both in European and the USA programmes is *climate change and disaster risk prevention*, while in Chinese programmes it is both *planning & the natural environment* and *environmental responsibility*. Finally, on planning and governance, European programmes favour urban *governance & political processes*, while in Chinese programmes it is *planning & the built environment* and *land use & spatial distribution of urban activities*. The latter is also most common in programmes in the GS, while USA programmes are stronger in *transportation & mobility*.

Comparing the results of netnography with the survey results we note that programme directors considered Societal issues to be indeed very important. This is arguably contradicted by the results for core courses (Figure 3, top left) however, we think the comments by directors can be partly explained by the variety of teaching formats, especially those with a greater practical component such as studios and final projects, and by the fact that students can choose electives from other master programmes - giving greater relevance to societal concerns. Indeed, syllabi rarely provide a thorough description of all the themes covered in the course. Another important factor, as noted earlier, is that Table 3 categories and issues include overlaps which reduce the accuracy of our analysis according to the four

[7] Within each programme, the same topic may occur in different courses – each occurrence counts as 1 point.

building blocks: for example, society issues may be approached in core courses primarily dealing with planning and governance.

Figure 3 – Results: Number of SUD issues covered by Programmes' core courses, elective courses and all courses, by SUD category (in absolute numbers)



5. Discussion

The results of our extensive literature review and empirical study enrich our understanding of urban studies' contribution to the objective of strengthening sustainable development education defined by the UN Decade of Education for Sustainable Development (DESD, UNESCO 2014). We found, both within scholarly debates and in existing top programmes, that USE contributes to the UN objective primarily through five enabling factors (Table 4) that relate closely to two of DESD's transformative dimensions and related changes: the content of curricula and approaches to teaching and learning. We discuss each in turn.

Content, is the first and most traditional transformative dimension. Having applied the framework in Table 4 to 25 top master programmes, we found that two enabling factors capable of promoting SUD-content in their curricula, perform quite well, but will suggest that there is room for improvement. The degree of integration of the three programme orientations (design, policy and management) was reasonably balanced. However, the importance given to the local context was revealed by: a strong management and policy

focus in the GS where planners tend to 'manage' rather than 'plan' urban development; a strong design focus in China given its strict top-down planning process focused on accelerated territorial urbanisation; and a more balanced combination in highly urbanized areas with stable regimes in place, e.g. EU and the USA. Ultimately the tension between design and policy orientations and the rising importance of management (Rohweder & Virtanen 2009; Senbel 2012) seem exemplified by China and the GS respectively. The GS and Europe are the only regions with a lower value for design when comparing with the other orientations, which suggests adjustments in favour of more integration of social and environmental concerns (Yüksek 2013; Bodenschatz 2011). Overall though, in order to establish more precisely whether there is a significant improvement compared to the analysis by UN Habitat (2009), and based on the comments by directors in our survey, the weight of final projects and dissertations in the curricula may have to be explored through other means than netnography.

We found that the four SUD building-blocks and related issues are all represented although data suggests, somewhat unevenly. Given the inevitable overlaps between issues within each block (Hassan and Lee 2015) and given that there is no recipe requiring a strict balance between the four pillars, our review is mainly intended to offer an overview of how top programmes in four world regions, explore SUD. The analysis suggests that emphasis on different blocks changes significantly when comparing core and elective courses in Europe, and to a lesser extent the USA. The results for core courses show a clear emphasis on planning and governance, followed by equal weight for environment and social issues, and significantly less attention to economic issues. This last aspect may be a cause of concern given the strong economic driver behind urbanisation and planning. Social issues are very well represented in elective courses, but mainly thanks to Europe's programmes. Overall, it is core courses that dictate the main focus and ethos of a programme, and as such European top programmes appear to require a more comprehensive range of sustainability issues compared with other regions. However, here again the survey suggests that the weight of final projects and dissertations in the curricula may influence the overall picture.

Regarding approaches to teaching and learning, the second UN transformative dimension, three of our enabling factors help understand the contribution of USE. The skills factor links directly to pedagogy. USE combines a large range of critical sustainability-related skills through its teaching and learning approaches. Our 25 programmes privilege analytical skills (particularly those in the USA), followed by technical skills and to a lesser extent participation and negotiation. In particular, China's top programmes confirm the UN Habitat statement

that planning schools in Asia value technical and analytical skills more than participation or negotiation competences (UN Habitat 2009), and our data suggest that similar pattern for the GS programmes. The tension between theory and practice discussed in the literature (Edwards and Bates 2011) appears to reach a sort of equilibrium in these top programmes; but the increasing demand for participatory and collaborative planning skills (Forester 1999; Healy 1997; UN Habitat 2009), which relates to UNESCO's top skill for sustainability education -promoting participation and collaboration- may require greater attention in future curricula. European programmes, and to a lesser extent the USA ones, were the only ones demonstrating significant emphasis on participation approaches and critical thinking, first and second most important skills in UNESCO's list. Results relating to these two top skills suggest a possible link between their relative popularity and the socio-political context of the programmes.

Our data also confirms UN Habitat's findings (2007), whereby little emphasis is given to skills such as future thinking, and to dynamic, inclusive and participatory strategic planning. Given that urban studies and urban development are significantly about shaping the future (UN Habitat 2014a), this dimension may deserve further examination with a view to explore closer links between design, policy and management, and the field of futures studies and anticipation (Miller at al. 2013).

The second aspect looks at interdisciplinarity (involving also some changes to curricula), considered intrinsically linked to both urban studies and sustainability. Yet, its poor implementation accounts as one of the major obstacles to the UN agenda for sustainability education. Interestingly our study shows here a somewhat reverse performance in terms of geographical distribution: overall, USE programmes reflect the need to adopt interdisciplinary approaches to teaching, research and learning; however, long-established cultural and institutional practices and epistemologies in favour of specialisation and disciplinary perspectives remain significant – confirmed by the fact that European programmes perform least well – while the GS performs best of all. The structural limitation of credits given for a certain course or the short duration of the programmes evaluated, but also the time and energy needed to coordinate and integrate different disciplines/programmes, coupled with the lack of human resources with interdisciplinary skills were additional obstacles mentioned in the survey. Last but not least, the focus and understanding of sustainability in USE is still closely related to the 'disciplinary' focus of the programme (e.g. a programme in a Geography department will most certainly have a different take on SUD than an Architecture department), as well as underpinned by distinct

cultural and professional milieus of different countries, since there is no global consensus on the 'disciplinary' understanding of urban studies.

The third aspect refers to ethics and critical reasoning, closely linked to UNESCO's second and third most important teaching types (critical thinking and problem-based learning). Moreover, ethics is considered inseparable from sustainability (UNESCO 2014), and from SUD (AESOP 1995; Holmberg et al 2008), as confirmed also by several survey comments claiming the importance of ethical issues in USE. Yet our sample of top programmes performs least well on both ethics and critical reasoning. Local context and culture have significant influence on these enabling factors. Whereas USE in Europe, for example, has largely moved away from direct input and learning by heart towards critical reasoning, learning in the context of China is often interpreted differently. Promoting critical reasoning is also linked to the hierarchical understanding of certain roles within academia, largely impacted by cultural factors: a student in Germany is more likely to question a statement by the teacher than a student in China for example (e.g. Liu et al 2010).

6. Conclusions

This inquiry has made a contribution providing an overview of the current thinking about USE and its relation to sustainable education goals and SUD, and developing an analytical framework (our first two objectives) for examining progress and shortcomings in promoting SUD through higher education (our last two objectives). Its analysis of 25 top programmes in urban studies gives an overview of the five enabling factors of education for SUD in four very different geographical regions and shows interesting common patterns as well as very significant differences, especially in the case of China.

Our data suggests that important steps are being taken towards the 'whole-system' transformation envisaged by UNESCO, but that those transformative factors depending on cultural and institutional values and practices remain relatively weak. Based on the findings drawn above, three aspects are likely to further improve USE's contribution to DESD-UNESCO objectives and to advance 'opportunities for purposeful intervention' towards SUD (AESOP 1995): a) stressing – rather than avoiding - the importance of ethical dilemmas and provide students with the skills to engage with them; b) improving opportunities for meaningful interdisciplinary inquiry and methods in curricula; and c) placing more emphasis on understanding the relationship between the economy and the built and natural environment. In the case of ethics and interdisciplinarity, directors responding to the survey acknowledged in equal measure their importance, and the significant obstacles in implementing these key enabling factors. In addition, given the rising importance of

transdisciplinarity in urban studies and practice, it will be useful to explore in more detail the use of terms (multi, inter and trans-diciplinary) in curricula, and their actual meaning.

Full integration of sustainability in USE, we would argue, remains a fragile process in tension between the need to reflect specific cultural and socio-economic local conditions and priorities on the one hand, with increasingly shared (global) challenges in terms of the content and teaching approaches capable of addressing global (social, economic and environmental) change. Urban issues and USE are especially sensitive to the political economic context in which they are conceived and designed. The framing of academic programmes is liable to influences by contingent changes in national economic priorities (and increasingly crises), and related planning and local labour demands. The generally promising results for USE presented here may be affected by the substantive influence of economic performance and financial flows, the declining or faltering rates of growth, and the impact these are likely to have (and are having) on urban governance and SUD as a priority.

Having targeted some of the top programmes around the world, the results discussed here represent most likely, the best state of the art in graduate urban studies. It would be important to extend this inquiry to a larger set of programmes, and also to address some of the limitations we encountered, including the difficulty of weighing the influence of dissertations and final projects, and the influence of core and elective courses (we took core courses to be fundamental in setting the tone of the programme). As we have argued throughout this inquiry, our analysis reflects on the overall characteristics that departments and programme directors value and choose to promote through their websites. Netnography gives a first overview of how programmes are conceptualised and tailored, and reveal the faculties' interest and/or commitment toward these characteristics. Widening the set of questions in our survey to directors, so as to target past and current students, and past and current teachers, would provide additional insight to our initial overview. This would deepen our understanding of the importance of common curricular and pedagogic characteristics - aimed at strengthening the capacity of education for SUD to address increasingly "shared rather than unique" challenges (UN Habitat 2009), while respecting the multi-dimensional need for context specificity in such studies. A survey and ideally selected interviews, would also help explore the fundamental obstacle to progress identified by DESD, whereby curricula are not developed for shaping sustainability but rather adapted to such purpose. Last, but not least, it is useful to remember that this project was confronted with an immediate obstacle regarding the creation of its sample of top programmes: no international ranking system offers a global coverage of what we have defined here as urban studies.

Such arena of education remains poorly acknowledged and categorised despite its undisputed relevance and the urgency of SUD challenges across all continents.

Progress is being achieved, at least within the top programmes around the world. Yet, ultimately, education for SUD – just like education for sustainability, and sustainability itself – requires a highly integrative and holistic approach to education, which implies not only the extension of its curricula and pedagogy but also a shift in mindsets and values, and this remains a challenge largely to be met. As the UN Decade for sustainability education has passed, the new SD Goal #4 for education will hopefully build further momentum for such deeper change to occur, and thus contribute to educate the next generations of planners, architects and urbanists capable of shaping sustainable urban futures that are 'inclusive, safe, resilient and sustainable' as hoped for through Goal #11.

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Annex 1 – Netnography: examples of programmes' goals*

EUROPE	
EU1	• To **shape and manage** the process of urban development • To provide skills for an efficient and aesthetically satisfactory organisation and management of the urban environment, with an emphasis on **design-oriented** research
EU2	• To provide candidates with the **analytical and practical tools** to engage reflexively with the **urban development and planning** challenges • To equip students with the capacity to develop **critical diagnoses of the urban**, and provide adequate responses within the framework of **socially and spatially just** urban governance
EU3	• To provide **a conceptual and empirical basis** from which to understand urban 'problems' and **critically evaluate** the prescribed 'solutions' • To encourage students to appreciate how a wide range of **policy** intentions and outcomes can be evaluated from economic, social, political and cultural perspectives, **from international to local scales**
EU4	• To engage architecture with the challenges of contemporary **urban strategies** • To develop **spatial strategies** through **architecture** as part of **urban policies**, and generate new urban clusters and types
EU5	• To train **planners** in the broadest sense of the professional field, that is to say, **generalists** to work in the **production and management** of the city • To prepare students for careers in research and **guidance for public decisions** at different **spatial scales** (from local to regional to national) and **temporal scales** (short-term to long term)
EU6	• To train highly qualified technicians for the **design and development of urban projects** adapted to dynamic and highly complex urban milieus, placing special emphasis on the **physical form of the urban intervention** in relation to which the other urban dimensions are considered (economic, social, technical)
EU7	• To prepare **generalists** who are **historically informed** and familiar with the **international processes of urban development** – not to train specialists who are systematically aligned to specific professions. • To develop students' ability to understand and probe the **current and future trends of cities** with relation to their historical origins
EU8	• To develop a solid and professional foundation in subjects, methods, theories and disciplines spanning from **urban building design and technologies** to knowledge about modeling and **user involvement** • To combine such skills as **creativity, engineering and team work**
CHINA	
CN1	• To cultivate high-level **interdisciplinary professionals** with specialized knowledge and comprehensive quality for **urban planning, design and management**
CN2	• To develop **technical design** with **engineering** qualities and skills, competent **urban planning and design** work, **theoretical** foundation and **regional** science to engage in urban development • To profit from a **multi-disciplinary** comprehensive university, and apply the theories and methods of the humanities culture, with a wide knowledge base of complex **urban planning and design**
CN3	• To teach **Chinese culture and history** as well as the capability to respond to **rapid urbanization in China** • Students are equipped to tackle difficult and sometimes controversial **social, political, economic, ethnic and religious issues** that are unique to contemporary China
CN4	• To provide high quality professional training in **urban planning, urban design, housing management and transport** to serve **Hong Kong** and the wider region through vigorous and forefront research and **interdisciplinary**, **theoretical, practical and community-based** teaching • To inform local, Chinese and Asian practices through **critical review of urban theories** and to theorize these evolving practices for the reference of urban scholars in the world
CN5	• The programme has a focus on **urbanization and suburbanization**, **urban structure**, **urban social geography**, **urban and regional development and planning**, and urban **demographics**
CN6	• To equip students to respond to some of the main challenges in urban areas, to create more **liveable, sustainable and just** cities, through **participatory planning** processes and in a people-oriented manner • Students are taught to develop **urban planning strategies** and **design proposals**, while including new approaches towards **food systems, biodiversity and eco-systems**
CN7	• To provide students an **international** grounding in **urban planning**, centered on the theme of **urban regeneration** • To provide students a comprehensive understanding of relevant urban problems and possible planning responses. They will be introduced to **theories and techniques** that will allow them to approach urban planning in a **critical, communicative, and people-oriented** way
CN8	• The programme combines **urban planning, architecture and landscape architecture** to form a type of education of **multi-disciplinary** advantages, based on the integration of teaching, research and practice with an **international perspective**
CN9	• To develop research and professional capacity of urban and regional management workers in aspects such as

	urban and regional planning, industrial layout, land development and management, **business development** and planning work
	USA
US1	• To produce creative and skilled professionals to help craft **built environments** - ecologically **sustainable and resilient**, **prosperous and fair**, **healthy and beautiful** • To guide students toward a **critical understanding** of cities around the world, their **architectures and landscapes**, and their many layers of meaning. We train students in **the art of designing** well-loved places that both nurture our senses and challenge our imaginations
US2	• To offer graduate students a comprehensive education in **design, technology, and the history and theories of architecture** • To teach **architecture** as a cultural practice involving both **speculative intelligence** and **practical know-how**
US3	• The program emphasizes planning to develop, preserve, and enhance the **built environment**. Students learn how to understand, analyze, and influence the variety of forces **- social, economic, cultural, legal, political, ecological, and aesthetic**, among others - shaping the built environment
US4	• The program emphasizes the mastery of the **tools necessary for effective practice**. It stresses **skills for policy analysis** and **institutional intervention**, to prepare graduates for work in a broad array of roles, from **traditional city planning** to **economic, social, and environmental planning**
	GLOBAL SOUTH
GS1	• To provide a solid knowledge of **theoretical and methodological instruments** to meet the needs of the **country** and the **region** • To provide the knowledge of **economic processes** occurring in the territory and their impact on **urban and social structures**, from the perspective of **political economy** and **spatial economics theory**
GS2	• To train professional **architects and urban planners** to answer the most complex demands of society regarding matters of **social and environmental** interest that require specific skills in formulating **development plans and projects** • To provide **interdisciplinary** training based on the convergence between knowledge of **humanities, arts and techniques**
GS3	• To train proactive professionals, aware of their environment, with knowledge of current **public policy, planning and cultural studies**, with ability to **critically** identify conflicts and opportunities • Emphasis on the **morphological dimension** in delivering economic, social, political and cultural dynamics
GS4	• To expose students to the diversities of **urban life on the African continent** and its problems and potentials • To teach planning as **inter-disciplinary** collaboration with professionals engaged in **the built environment** – on work that can range from **local scale design** to **metropolitan planning** to **policy** work

*In bold are some of the key-words of interest for our netnographic reading.

Highlights

- We explore the contribution of urban studies to the United Nations goal of embedding sustainability in all learning areas.
- We review existing literature to identify the key factors that can enable education for sustainable urban development.
- We define an analytical framework related to various aspects of curricular content and teaching and learning approaches.
- We explore progress towards education for sustainable urban development within 25 top programmes worldwide.
- We find both strengths and weaknesses in these top programmes, including important differences and common shortcomings.